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IRRUPTION OF WHITE-NECKED HERON (*ARDEA PACIFICA*) INTO SOUTH-WESTERN AUSTRALIA IN 1975.

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INTRODUCTION

Serventy (1953) documented a southern invasion by certain northern birds into southwestern Australia in 1952. He noted that these movements were evident in the whole of southern Australia, and concluded that they were closely related to an unusual sequence of weather conditions in northern and central Australia. Extensive flooding of the Lake Eyre basin in 1949 and 1950 resulted in the first recorded filling of Lake Eyre. Consequent upon these favourable breeding conditions, bird populations built up to high levels; the populations could not be sustained in the ensuing dry conditions of 1951-2 and a mass southerly movement occurred in 1952.

The effect of episodic rains and changing water levels on the breeding physiology of avian species has been known since the pioneering studies of Serventy and Marshall (1957). Since then numerous workers (e.g. Frith, 1967 and Bekle, 1983) have examined the effects of unseasonal precipitation on the breeding behaviour of various species of waterfowl, and like Serventy and Marshall (*ibid*) they indicate clearly that rainfall triggers breeding. Some of these authors also indicate that heavy rainfall triggers waterfowl movement. This rainfall may be regular and seasonal or it may result from unpredictable episodic events such as tropical cyclones, events that may produce major areas of short term mesic environments (Gentilli, 1956).

This paper examines the irruption of the White-necked Heron (*Ardea pacifica*) into south-western Australia in 1975 and relates this to rainfall in different parts of Australia.

RAINFALL PRECEDING AND DURING THE 1975 IRRUPTION

In 1973 above average rains fell in eastern and northern Australia after several

dry years (Anon. 1975a). Heavy rains occurred in these regions in 1974 but considerably below average rains were recorded in eastern Australia in 1975 (Anon. 1976).

In Western Australia several cyclones in 1975 resulted in widespread mesic environments similar to those described by Gentilli (1956). In February above normal rainfall occurred in much of the State except the south-western part (Anon. 1975b), while in March three cyclones were responsible for widespread rain in the northern and southern parts of Western Australia, which included above average rain in the East Gascoyne, Murchison, West Coastal and Eucla districts (Anon. 1975c). Tropical cyclone "Beverley" resulted in widespread rain over most of the southern half of Western Australia and the southern tropics in April (Anon. 1975d). In May a progression of southern depressions produced moderate to heavy falls of rain throughout the South-west and South-east districts (Anon. 1975e).

Rainfall patterns were not markedly different from average during the remainder of 1975 with October-December tending to have below average rains in southern Western Australia (Anon. 1975f-l). However, the onset of the tropical monsoon season produced above average rain in October and in November good falls extended southwards to the Gascoyne.

THE 1975 IRRUPTION

I was first alerted to the possibility of an irruption of White-necked Herons into south-western Australia in May-June 1975 when I began noticing more birds than previously in coastal areas north of Perth. A flock of 26 flying southeast over the northern wheatbelt on 15 June (Dell, 1979) confirmed that movement was taking place. I then invited bird watchers to send me notes on their observations both before this date and in the months following. A total of 146 persons forwarded information. All observations are tabulated on Figure 1.

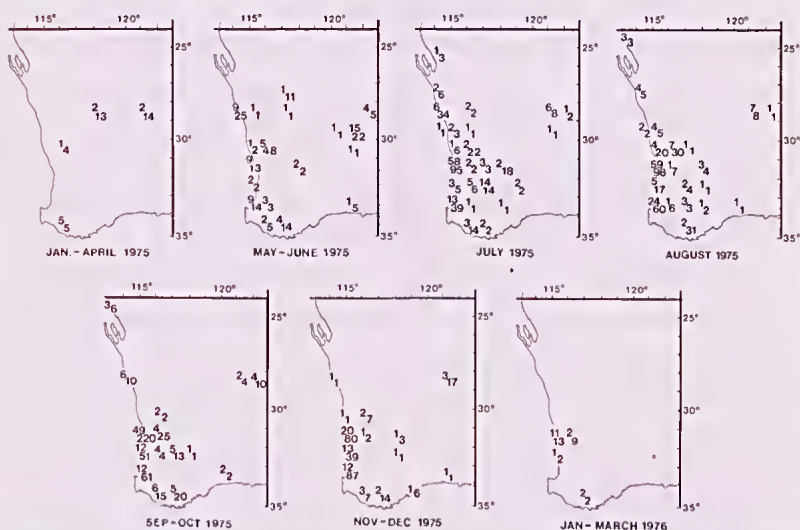


Figure 1. The location of sightings of White-necked Heron in south-western Australia from January 1975 to March 1976. The upper number in each degree square shows the number of sightings and the figure below shows the total number of individuals.

Figure 1 shows that at the beginning of the irruption (May/June 1975) numbers were more frequent in the northern wheatbelt and Goldfields following cyclone "Beverley's" heavy rain than further south. Sightings then became more frequent and widespread. By July/August and even into September/October the White-necked Heron could be regarded as a common species and likely to be seen in any waterlogged paddock or roadside ditch over most of southwestern Australia. From November to December there was a reduction in the number of birds seen; the birds were concentrated in wetter coastal areas from Perth southwards.

Low numbers of individuals were recorded preceding the irruption (January/April 1975) and after the irruption (January/March 1976). This indicates clearly the decline in numbers because after I had solicited reports there would have been increased interest by observers. Some of the differences in Figure 1 may be attributable to variation in observer effort; for example, there were more observers in the South-west than in the wheatbelt and goldfields.

The number of White-necked Herons in southwestern Australia in winter and spring 1975 was considerably more than encountered in preceding or subsequent years. Also notable was the high number of individuals per sighting, with up to 26 flying together; usually in southwestern Australia this heron is recorded singly or rarely more than two together. The tapering off of sightings in the summer of 1975-76 followed good falls of rain in northern, and below average rain in southern Western Australia (Anon. 1975j-l). Therefore birds retreating from southern areas would have encountered favourable conditions in the north.

The unusual population increase of White-necked Heron in southwestern Australia in 1975 was mirrored by Black-tailed Native Hen (*Gallinula ventralis*) which was also present in larger numbers in winter and spring. Large aggregations were reported from Leonora and Giles in June and July. By July I noted flocks throughout the northern wheatbelt as far south as Wongan Hills.

In summary, the irruption of large numbers of White-necked Heron in southern Western Australia in 1975 was preceded by favourable breeding seasons in eastern and perhaps northern Australia in 1973 and 1974. Below average rains in eastern Australia in 1975 reduced suitable mesic environments there and led to a dispersal elsewhere. The availability of favourable mesic environments in southern Western Australia enabled many individuals to move into the South-west.

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PINCUSHION MILLIPEDES (DIPLOPODA: POLYXENIDA): THEIR AGGREGATIONS AND IDENTITY IN WESTERN AUSTRALIA

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In some areas of Western Australia, tiny brown polyxenid millipedes appear periodically in slow-moving aggregations comprising vast numbers of individuals. In the north-west of W.A. major outbreaks have been reported to me since 1972 from the Hamersley Range area. The towns whose inhabitants have been particularly troubled by these teeming millipede masses have included Wittenoom and Tom Price. The millipedes, which reach a length of about 3mm, have gained their common name of pincushion millipedes from